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ABSTRACT

A longitudinal study investigated the effects of an early intervention program with students who were identified as being at risk for developing reading disabilities. Intervention effects on reading comprehension and the developing relationship between reading comprehension and the linguistic processes of students were studied. The intervention program was implemented at the beginning of formal reading instruction and used individual clinical instruction with at-risk students. A total of 37 private school students were divided into 3 cognitive abilities groups and evaluated over a 3-year period using the reading comprehension and study skills sections of the "Stanford Achievement Tests" administered annually. Results showed no significant differences in the reading comprehension scores for at-risk and non at-risk students. However, the at-risk group showed significantly lower scores on the study skills section by the end of grade three. These results indicated that early reading intervention for at-risk students promoted compensation and helped develop processes for adequate reading comprehension. The at-risk students demonstrated weaker linguistic abilities than their non at-risk peers. (Two tables of data are included.) (MG)

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Early Intervention For At-risk Beginning Readers: A Longitudinal Investigation of Reading Comprehension And Linguistic Processes

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Studies have found that approximately 15 percent of children in our school have severe reading problems (Satz, 1978; CELDIC report, 1970; de Hirsch & Jansky, 1966). This percentage has held constant despite various changes in reading methods and programs. Historically, students who developed reading disabilities had been exposed to a multitude of remedial techniques and programs, but the common denominator which all these programs shared has been their ineffectiveness in dealing with the reading disability. Reviews of prior research have demonstrated that once reading disability has occurred, it is not very amenable to correction (Hynd & Cohen, 1983; Balow, 1965; Muehl & Fortrel, 1973). Faced with this failure to successfully remediate reading disabilities, it appeared that what was needed was a reorientation of priorities in this area. Instead of focusing most resources on remedial programs which have been initiated well after the reading disability has been documented, professionals should be examining other options. One such option is early intervention.

Early intervention has been defined as "... any program designed to prevent progression of a disability or handicapping condition, or introduce helping procedures in situations where the handicapping

condition is already established" (White & Mott, 1987, p. 13). Other investigators (Silver, 1983; Work & Whitehurst, 1983; Satz, 1978; CELDIC, 1970; & Critchley, 1981) have referred to early intervention as an important means for preventing or alleviating reading disabilities in individuals, but there has been little valid research performed in this area. The results of interventions performed with large groups of children have not been informative since the heterogeneous nature of the populations studied has made it difficult, if not impossible to know which programs have been effective and why they have been effective (Castro & Lewis, 1986). In order to have a base of valid research to examine the effects of early intervention and reading development, Wong (1986) suggested that future research needed to be conducted on more homogeneous subgroups. Also, with the diversity in causation and types of reading disabilities, individual instruction was recommended as being the most promising means of preventing reading disabilities in at-risk groups (Zigmond, 1978). The studies reviewed investigated individual instruction as a means of early intervention.

Studies which described intervention with individual children can be divided into two educational

models. The first model contained studies that utilized a deficit centered approach (White, 1979; Hagin, Silver & Beecher, 1978) where intervention techniques were focused on a teaching program that was targeted to the development of deficient sensory-motor and neuropsychological areas that had been identified through special test batteries. The second model of early intervention reading studies (Clay, 1979; Madden, Slavin & Karweitt, 1988) were not specifically deficit or strength oriented, but approached reading as a complex language based process and not as a series of skills to be mastered. Positive significant improvement on reading achievement has been reported from both intervention models.

This was a longitudinal study that investigated the effects of an early intervention program with students who were identified as being at-risk for developing reading disabilities. Intervention effects on reading comprehension, and also the developing relationship between reading comprehension and the linguistic processes of the students were studied. The intervention program was implemented at the beginning of formal reading instruction and used individual clinical instruction with at-risk students. A total of 37 private school students were divided into three

cognitive abilities groups and evaluated over a three year period using the reading comprehension and study skills sections of the Stanford Achievement Tests (1982) administered annually. At-risk students were matched with a normal peer group for gender, cognitive ability, and time at school. Results showed there were no significant differences in the reading comprehension scores for at-risk and non at-risk students. However, the at-risk group showed significantly lower scores on the study skills section by the end of grade three.

These results indicated that early reading intervention for at-risk students promoted compensation and helped develop processes for adequate reading comprehension. Clay, (1985) suggested that the very act of reading allowed the child to build complex systems that could not be taught. Perhaps the reading comprehension scores of the at-risk group can be further explained by experience expectant theory from the field of psychobiology (Greenough, 1987). At certain developmental periods there is an overproduction of synapses in the critical areas of the brain related to specific functions. Experiences then influence not only the production of more synapses, but which synapses remain and which are lost. Thus the early successful and structured reading experiences are

also being encoded in the neural organization of the brain. Therefore, this learning will have an actual physical effect on the brain and, in turn, influence future learning.

However, these students demonstrated weaker linguistic abilities than their non at-risk peers. An explanation for this difference between comprehension and word skills achievement can be found in the Stanovich interactive compensatory model of reading (1980). A deficiency in any process of reading, at any level, can be compensated for by relying on other systems or processes that are better developed. Thus, if an at-risk student can be helped to develop efficient systems in some reading processes, these systems can be used to help him compensate for the weaker systems so that the student can still achieve the same end result of comprehension as readers who were not at-risk.

The applicability of this study is limited to the population used in this investigation. Also, the means of evaluation, standardized tests, gives only limited information. It is hoped that this investigation will generate research of other populations, and also, qualitative research that can give further insights into developing reading processes in at-risk groups.

Table 2

Correlation Coefficients of Z Scores for Stanford Achievement Tests Reading Comprehension (SATRC) and Study Skills (SATSS) Scores for Grades 1-3

Grade		2 SATRC	3 SATRC	1 SATSS	2 SATSS	3 SATSS
	SATRC					
1	r	0.48	0.46	0.74	0.37	0.37
	p	.000*	.001*	.000*	.001*	.007*
2	r		0.59	0.45	0.43	0.45
	p		.000*	.000*	.000*	.001*
3	r			0.47	0.31	0.41
	p			.001*	.020*	.003*
	SATSS					
1	r				0.33	0.39
	p				.004*	.004*
2	r					0.68
	p					.000*

r = Pearson's Coefficient of Correlation

p = p value of test, H_0: $\rho = 0$. * $p < .05$

Table 14

Paired Student t Test of Stanford Achievement Tests Reading Comprehension (SATRC) vs. Study Skills (SATSS) Z Scores for Program and Control Students by Grade (1-3)

Group	Grade 1			Grade 2			Grade 3		
	Mean	S.E.	t[a]	Mean	S.E.	t[a]	Mean	S.E.	t[a]
Program									
SATRC	0.84	0.115	7.30*	0.71	0.112	6.34*	0.92	0.192	4.79*
SATSS	1.05	0.135	7.78*	0.59	0.128	4.61*	0.28	0.151	1.85
p-value	0.061			0.418			0.001*		
Control									
SATRC	0.84	0.139	6.04*	0.85	0.141	6.03*	1.02	0.157	6.50*
SATSS	1.19	0.128	9.30*	0.94	0.150	6.27*	1.26	0.175	7.20*
p-value	0.000*			0.562			0.237		

[a] Test of $\mu = 0$, the critical values for the test were $t_{21,.05} = 2.07$

* $p < .05$